

# **Considerations in Sheet Metal Forming Simulation**

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Numerical simulation has undoubtedly become an indispensable tool in sheet metal forming. Finite element analyses are now run routinely in the automotive industry to develop stamping process steps and corresponding dies. With certain simplifications and assumptions adopted in sheet metal forming FE simulation, the calculated results will never completely replace physical die tryouts, but rather drastically reduce lead time spent in die tryouts, leading to near optimized die design. These benefits of FE simulation are evidently diminishing when working with new generations of steel such as Advanced High Strength Steels. Part springback and formability can no longer be predicted as accurately.

This presentation will address the simplifications and assumptions adopted by FEM that might be responsible to these discrepancies. An emphasis will be put on different material models used in the analyses, including their pros and cons. Also, relevant advancements in material modeling and simulation techniques will be discussed. All these improvements have shown promising results in stamping simulation of AHSS parts.